From: Patel, Harish
To: Pierce, Jennifer
Subject: Limetree Refinery description of emissions
Date: Thursday, May 13, 2021 6:06:15 PM

Hi Jennifer,

Based on my expertise and best professional judgment of inspecting petroleum refineries, here is a very general description of emissions that are released from typical refinery process operations.

Refineries emit a whole host of pollutants ranging from NOX, SO2, and CO to VOC, H2S, and PM. NOx, SO2, and CO are typically emitted from combustion sources such as heaters, boilers and gas turbines. VOCs are typically emitted as fugitives from process equipment like valves, pumps, flanges etc. VOCs can also be emitted from wastewater operations throughout the refinery. The VOCs contain light hydrocarbons (C1 to C6 chain –methane, ethane, propane, butane and benzene). H2S, ammonia and carbon dioxide are also emitted from the sour water and sour gas stripping operations. The H2S, NH3, CO2 and acid gas are then routed to the sulfur plant to be converted to sulfur, nitrogen, water and CO. During startup, there may be elevated emissions for some pollutants, however, they are required to be controlled under the regulations. For process unit start up, any VOCs are usually conveyed to the flare to be combusted.

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